

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Thomas D. Hanan

Application No.: 10/003,675

Filed: October 31, 2001

For: METHOD FOR INSTALLING A
PORTAL TO A PROTECTED
AREA OF A DISK DRIVE



Group Art Unit: 2137

Examiner: JEFFREY D POPHAM

Appeal No.: _____

APPEAL BRIEF

Mail Stop APPEAL BRIEF - PATENTS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is from the decision of the Primary Examiner dated March 19, 2007 finally rejecting claims 1-8, which are reproduced as the Claims Appendix of this brief.

- A check covering the \$ 255 \$ 510 Government fee is filed herewith.
- Charge \$ 255 \$ 510 to Credit Card. Form PTO-2038 is attached.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

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I. Real Party in Interest

The present application is assigned to Western Digital Corporation. Western Digital Corporation is the real party in interest, and is the assignee of Application No. 10/003,675.

II. Related Appeals and Interferences

The Appellant's legal representative, or assignee, does not know of any other appeal or interferences which will affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of Claims

Claims 1-8 remain pending in the application, have been finally rejected, and are the subject of this appeal. Claims 1 and 4 are independent.

IV. Status of Amendments

All amendments have been entered. There are no pending Amendments After Final Rejection.

V. Summary Claimed Subject Matter

Appellant's Figure 1 shows a disk drive 100 having a disk storage medium 106. The disk storage medium 106 can include a first range of disk drive host interface addressable locations. For example, the locations within a first space defined by a partition 110 are directly accessible by the host computer operating system 104, as described in specification page 6, paragraph [0014] at lines 6-8. As described on specification page 7, paragraph [0016], at least one of the addressable locations of the first range of host interface addressable locations can be used to designate a mailbox file, such as the exemplary mailbox file 120.

A disk controller 112 can respond to a command from the host computer operating system that references the mailbox file 120 by performing a function

characterized by contents of the mailbox file. (See paragraph [0017], lines 4-6). The function characterized by contents of the mailbox file can be in the form of an executable function performed by the disk controller (as opposed to being performed by the host computer). Figure 4, described at specification pages 15-17, paragraphs [0032] to [0035], also describes this operation. Because the host computer simply addresses a location in the disk storage medium to initiate an executable function performed by the disk controller, the speed at which a function is performed by the disk controller, can be accelerated. (See specification page 8, paragraph [0017]).

In exemplary embodiments, the command used to access the mailbox file 120 can be a command to read or write to a hidden space on the disk storage medium, such as the hidden partition 125 described in paragraph [0029]. The function characterized by the mailbox file can be an access to locations within the hidden space. A command block stored in mailbox file 120 can, in this case, be encrypted, and an access key can be used to decrypt and validate the command block to trigger access to information in locations inaccessible to the host computer.

Such features are broadly encompassed by Appellant's claim 4. This claim recites:

In a computer system including a host computer, a disk drive host interface and a disk drive having a disk controller, a method for accessing a mailbox file associated with a first range of disk drive host interface addressable locations, the method comprising the steps of: (e.g., Fig. 1, host computer 102, disk drive 100; Figure 4)

recognizing a command from a host operating system in reference to the mailbox file associated with the first range of disk drive host interface addressable locations; and (e.g., specification page 6, para. [0014], lines 6-8; Figure 4; 405)

responding to the command by performing within the disk controller an executable function characterized by the contents of the mailbox file. (e.g., specification page 8, para. [0017], Figure 4; 410).

Exemplary embodiments of the present invention are also directed to a method for installing such a mailbox file. Figure 6, described at paragraphs [0039] to [0042], illustrates a flow chart of steps for installing a mailbox file using an access

key obtained from an access key server. (See paragraph [0039]). The access key can be used to create a mailbox file (See step 610, and paragraph [0042], lines 1-3). The disk drive is notified of the location of the mailbox file in step 615, so that it can perform an executable function characterized by content of the mailbox file.

The foregoing features regarding installation of the mailbox file are encompassed by claim 1 which recites:

In a computer system including a host computer, a disk drive host interface and a disk drive having a disk storage medium with a first range of disk drive host interface addressable locations, a method for installing a mailbox file associated with the disk storage medium, the installation method comprising the steps of: (e.g., Figure 1, host computer 102, disk drive 100; Figure 6)

obtaining a disk drive access key from an access key server, the access key being generated by the access key server as a function of an identifying characteristic of the disk drive; (e.g., 605, specification page 19, lines 1-2)

creating a mailbox file in the first range of addressable locations using the access key obtained from the access key server; and (e.g., 610, specification page 20, para. [0042], lines 1-3)

notifying the disk drive of a location of the mailbox file in the first range of addressable locations, wherein the disk drive can perform an executable function characterized by contents of the mailbox file. (e.g., 615, specification page 20, para. [0042]. lines 6-9)

**VI. Grounds of Rejection to be Reviewed on Appeal:
Anticipation/Obviousness**

- A. Whether Claim 4 And Dependent Claims 5-6 Are Properly Rejected Under 35 U.S.C. §102(e) As Being Anticipated By Commonly Assigned U.S. Patent No. 7,003,674 (Hamlin).
- B. Whether Claim 4 And Dependent Claims 5-6 Are Properly Rejected Under 35 U.S.C. §102(b) As Being Anticipated by U.S. Patent No. 5,235,641 (Nozawa et al).
- C. Whether Dependent Claim 8 Is Properly Rejected Under 35 U.S.C. §102(b) As Being Anticipated by U.S. Patent No. 5,812,883 (Rao).
- D. Whether Independent Claim 1 Is Properly Rejected Under 35 U.S.C. §103(a) As Being Unpatentable Over U.S. Patent No. 6,966,002 (Torrubia-Saez) In View Of The Nozawa patent.

- E. Whether Dependent Claims 2-3 Are Properly Rejected Under 35 U.S.C. §103(a) As Being Unpatentable Over The Torrubia-Saez Patent In View Of The Nozawa Patent And U.S. Patent No. 6,681,304 (Vogt).
- F. Whether Dependent Claim 7 Is Properly Rejected Under 35 U.S.C. §103 As Being Unpatentable Over The Rao Patent In Combination With the Torrubia-Saez Patent.

VII. Argument

None of the documents cited by the Examiner are directed to: (1) creation of a mailbox file in a first range of **host interface addressable locations**; (2) wherein the **disk drive** can perform an executable function **characterized by contents of the mailbox file**. No such mailbox file, located at a host interface addressable location, is disclosed by the documents relied upon by the Examiner.

A. **Claim 4 And Dependent Claims 5-6 Are Allowable Over Commonly Assigned U.S. Patent No. 7,003,674 (Hamlin).**

The Hamlin patent does not disclose recognizing a command from a host operating system in reference to a host addressable mailbox file. The cited portion of the Hamlin patent does not disclose responding to the host command by performing, within the disk controller, an executable function that is **characterized by the contents of the mailbox file**.

The citations to the commonly owned Hamlin patent in the Final Office Action are directed to Hamlin's disclosure of a disk drive having a disk with a public area for storing plain text data and a pristine area for storing encrypted data. A control system is provided by Hamlin for controlling access to the pristine area of a disk, with access only being granted upon authentication of a request. A secret drive key is provided in the disk drive, and decryption circuitry uses this secret drive key for decrypting encrypted data stored in the pristine area of the disk.

In rejecting claim 4 on page 5 of the Final Office Action, the Examiner refers specifically to column 5, line 58 through column 7, line 27 of the Hamlin patent. This portion of the Hamlin patent is directed to various functions, such as the

aforementioned user/device authentication whereby authentication circuitry 14 uses an entity ID of a request to read an associated password from a pristine area 8, and the request is authenticated if the stored password matches the entity password received in the request. (See Hamlin patent at column 5, lines 65 to column 6, line 3). Because an entity ID of a request is used for authentication, no mailbox file as presently claimed is accessed.

In the Hamlin patent, the disk controller does not perform an executable function that is characterized by the contents of the pristine area; rather, the disk controller compares information included in a host request with information retrieved from the portion of the pristine area 8 that is accessed by the authentication circuitry 14, not by the host.

The Hamlin patent also discloses that encrypted information which is stored in the pristine area 8 can be decrypted at the time it is read using a previously stored secret drive key 16 (see column 6, lines 4-12). However, the information stored in the pristine area is merely user/device authentication information acted upon by the decryption circuitry 18 for use by the authentication circuitry. As such, the Hamlin patent fails to teach or suggest Appellant's claim 4 method.

On page 3 of the Final Office Action, the Examiner's "Response To Arguments" specifically refers to the Hamlin patent at column 6, line 66 to column 7, line 2. This portion of the Hamlin patent describes a portion of pristine area 8 on the Figure 3 disk 4 that is accessed by authentication circuitry 14; this portion of the pristine area is **not** addressable by an external requesting entity (i.e., host computer). The pristine area 8 "stores information to implement a suitable challenge and response sequence ...to authenticate an external entity by sending a random challenge value to the external entity." (Column 6, lines 60-64). Column 7, lines 13-14 of the Hamlin patent describe use of a message authentication code (MAC) that is generated and appended to a request from an external entity. Upon receipt of the request, the authorization circuitry 14 (and not the requesting external host entity) accesses the pristine area 8 to authenticate the request.

Thus, there is no host addressable "mailbox file" as presently claimed in this portion of pristine area 8, and no executable function performed by the disk drive of the Hamlin patent is characterized by the contents of such a mailbox file. Rather,

pristine area 8 merely contains data that is accessed by the disk drive under the control of the authentication circuitry 14 to authenticate a request being made by an external entity to a different location of the disk drive.

The Hamlin patent does not disclose a host interface addressable mailbox file as presently claimed. Moreover, the Hamlin patent does not disclose use of a "mailbox file" as presently claimed to characterize an executable function that is to be performed by the disk drive. The Hamlin patent does not describe that the disk drive of Figure 3 in the Hamlin patent is a disk controller which performs an executable function characterized by contents of a mailbox file accessed by an external entity.

Appellant's claim 4, and dependent claims 5 and 6, are therefore allowable over the Hamlin patent.

B. Claim 4 And Dependent Claims 5-6 Are Allowable Over U.S. Patent No. 5,235,641 (Nozawa et al).

The Nozawa patent, like the Hamlin patent, does not teach Appellant's claim 4 combination which includes, among other features, a step of responding to a host command received via a host interface to access a mailbox file by performing, within a disk controller, an executable function **characterized by contents of a mailbox file**. Both of these patents are directed to merely reading data from a disk location, and to using functions that act upon the retrieved information (e.g., authorization or decryption function). In no case does information retrieved from a host addressable location of a disk drive characterize a function that is to be executed by the disk drive.

In rejecting claim 4 over the Nozawa patent on page 6 of the Final Office Action, the Examiner relies on column 6, line 35 through column 7, line 27. This portion of the Nozawa patent is directed to use of an upper rank apparatus 1 serving as a host controller which provides an instruction to a magnetic tape control device 2. This instruction is not an access to an addressable mailbox file. In response to this instruction, a microprocessor 9 of the magnetic tape control device 2 reads from the magnetic tape medium an encrypted data key as described at column 6, lines 36-46. A data key cryptographic device 11 decrypts the key to provide a raw data

key, which is set in a data key storage mechanism 8. Subsequently, the decrypted data can be decompressed, if necessary, and sent to the upper rank apparatus 1 through a channel interface control section 3.

On page 3 of the Final Office Action, The Examiner's "Response to Argument" addresses the rejection of independent claim 4 over the Nozawa patent, with specific reference to column 6, lines 35 to column 7, line 27 of the Nozawa patent. However, the Nozawa patent does not disclose a host interface addressable mailbox file as claimed, or a disk controller which performs an executable function characterized by contents of such a mailbox file.

The upper rank apparatus 1 described at column 6, lines 35 *et seq.* of the Nozawa patent serves as a "Host" in Figure 1 of the Nozawa patent, which merely reads an encrypted data key stored in magnetic tape device 12 so that the key can be transferred by the upper rank apparatus to a data key cryptographic device 11 (see col. 6, lines 46-51). The upper rank apparatus 1 and the data key cryptographic device 11 perform an executable function. However, the magnetic tape controller 2 does not perform an executable function characterized by contents of any mailbox file as presently claimed.

As such, independent claim 4, and dependent claims 5-6, are allowable over the Nozawa patent

C. Claim 8 Is Allowable Over U.S. Patent No. 5,812,883 (Rao)

Dependent claim 8 (and thus independent claim 4) is allowable over the Rao patent.

The Rao patent does not teach or suggest a host interface addressable mailbox file on a disk storage medium, or a disk device which can perform an executable function characterized by contents of a mailbox file accessed by a host command via a disk drive host interface. The Rao patent therefore does not overcome the deficiencies already noted herein with respect to the other documents relied upon by the Examiner.

The Rao patent discloses in Figure 2 a storage drive assembly 106 having a disk 208 and a nonvolatile memory 212 (e.g., an EPROM, as described at col. 2, lines 10-12 and col. 5, lines 47-52). All of the cited portions of the Rao patent relied

upon by the Examiner are directed to control parameters stored in the memory device 212, which is included on the SCSI controller board 202. (See, e.g., col. 2, lines 18-19; col. 3, lines 12-25; col. 6, lines 46-55 and col. 8, lines 38-39). The stored parameters include, for example, parameters to control operation of the disk drive 106, and can be changed by the user via a utility program in a computer connected to the disk drive (see col. 2, lines 13-16).

However, accessing and altering a program stored in the EPROM is not the same as responding to a command from a host operating system in reference to a mailbox file associated with a first range of disk drive host interface addressable locations by performing within the disk controller an executable function characterized by the contents of a mailbox file. Therefore, the Rao patent does not teach or suggest the presently claimed invention as set forth in independent claim 4. For example, in no case does the Rao patent disclose or suggest that a storage location of Rao's EPROM 212, upon being accessed by a host computer, causes the disk drive to perform an executable function that is characterized by the contents of the location being accessed. Rather, the host computer of the Rao patent merely recognizes a command to change information stored at various locations in the EPROM 212. The changing of the stored information can be used to alter operation of the disk drive 106, but such altered operation does not occur in response to the command used to change the information. The operation of Rao's system is thus in sharp contrast to the presently claimed invention.

Such features are broadly encompassed by Appellant's independent claim 4, such that claims 4 and 8 are allowable.

D. Independent Claim 1 Is Allowable Over The Torrubia-Saez Patent in view of the Nozawa patent.

Appellant's claim 1 combination, directed to a method for installing a mailbox file, is also allowable. The Torrubia-Saez patent, considered alone or in combination with the Nozawa patent, fails to teach or suggest Appellant's claim 1 combination. Even if it is assumed for the sake of argument that the Torrubia-Saez patent and the Nozawa patent could have been combined in the manner suggested by the Examiner, the presently claimed invention would not have resulted.

The Torrubia-Saez patent is directed to secure distribution of software, and in this regard, is considered no more relevant to the presently claimed invention than the documents already discussed. The Torrubia-Saez patent describes storage of files on a disk drive, using commands which are executed by a host CPU, **not** the disk drive. An access key generated in the system of Torrubia-Saez does not provide access to a mailbox file, wherein the disk drive can perform an executable function characterized by the contents of that file. Thus, there would have been no suggestion in Torrubia-Saez to enable a disk drive to perform an executable function characterized by the contents of a mailbox file (all executable functions are conventionally performed by the host in Torrubia-Saez).

Moreover, there would have been no suggestion to have modified the system of Torrubia-Saez, based upon teachings of Nozawa, to obtain a disk drive access key from an access key server, to create Appellant's claimed mailbox file, or to perform the notifying step of claim 1. The Nozawa patent was discussed herein with regard to claim 4. Neither the Torrubia-Saez patent nor the Nozawa patent teaches or suggests use of an access key generated as a function of an identifying characteristic of a disk drive, creating a mailbox file using such an access key, and notifying the disk drive of a location of the mailbox file, wherein the disk drive can perform an executable function characterized by contents of the mailbox file. At best, any combination of these two patents would have resulted in storing **host-executable** files of Torrubia-Saez on a disk drive; not disk drive executable files. There would have been no motivation or suggestion to convert host-executable files discussed in the Torrubia-Saez patent into disk drive-executable files. For at least these reasons, the rejection of claim 1 over these patents should be withdrawn.

On page 4 of the Office Action, the Examiner's "Response to Arguments" refers to the combination of the Torrubia-Saez patent and the Nozawa patent. The Examiner acknowledges that the Torrubia-Saez patent "does not disclose that the disk drive can perform an executable function characterized by contents of the mailbox file" (Office Action at page 4, lines 3-5). The Examiner therefore relies on portions of the Nozawa patent at column 5, line 21 to column 7, line 27. As already discussed, the Nozawa patent does not disclose or suggest a mailbox file and/or a disk drive which performs an executable function characterized by contents of the

mailbox file. Accordingly, even if it is assumed solely for the sake of argument that the systems of these patents could have been combined in the manner suggested by the Examiner, the presently claimed invention would not have resulted. Neither document teaches or suggests a host interface addressable mailbox file as presently claimed, or a disk controller which performs an executable function characterized by the contents of any such mailbox file.

As such, claim 1 is allowable over the Torrubia-Saez and Nozawa patents.

E. Claims 2-3 (Which Depend From Claim 1) Are Allowable Over The Torrubia-Saez Patent In View Of The Nozawa Patent And U.S. Patent No. 6,681,304 (Vogt).

The Vogt patent, cited on page 9 of the Final Office Action with regard to claims 2 and 3, fails to overcome the deficiencies of Torrubia-Saez and Nozawa patents. The Vogt patent was cited on page 10 of the Final Office Action as disclosing a second range of addressable locations that are not disk drive host interface addressable. The Examiner implicitly acknowledges that the Vogt patent does not disclose the features of claim 1. Because the Vogt patent does not overcome the deficiencies of the Torrubia-Saez and Nozawa patents discussed herein, claims 1-3 are allowable over the Torrubia-Saez, Nozawa and Vogt patents.

F. Claim 7 Is Allowable Over The Rao Patent In Combination With The Torrubia-Saez Patent.

Claim 7 depends from claim 1, and is allowable over the Rao and Torrubia-Saez patents. The Rao patent does not teach or suggest the presently claimed invention as set forth in independent claim 1. For example, in no case does the Rao patent disclose or suggest that a storage location of Rao's EPROM 212, upon being accessed by a host computer, causes the disk drive to perform an executable function that is characterized by the contents of the location being accessed. Rather, the host computer of the Rao patent merely changes information stored at various locations in the EPROM 212. The changing of the stored information can be used to alter operation of the disk drive 106. Rao does not disclose or suggest creating a mailbox file in a first range of host addressable locations using an access

key, and notifying the disk drive of a location of the mailbox file in the first range of addressable locations, wherein the disk drive can perform an executable function characterized by contents of the mailbox file.

The Torrubia-Saez patent, as already discussed, fails to overcome these deficiencies. As such, even if these two patents are combined in the manner suggested by the Examiner, the presently claimed invention would not have resulted.

Because the foregoing features are broadly encompassed by Appellant's independent claim 1, this claim along with dependent claim 7, is allowable.

VIII. Claims Appendix

See attached Claims Appendix for a copy of the claims involved in the appeal.

IX. Evidence Appendix

See attached Evidence Appendix for copies of evidence relied upon by Appellant.

X. Related Proceedings Appendix

See attached Related Proceedings Appendix for copies of decisions identified in Section II, supra.

Respectfully submitted,

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Date December 4, 2007

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VIII. CLAIMS APPENDIX

The Appealed Claims

1. (Previously Presented) In a computer system including a host computer, a disk drive host interface and a disk drive having a disk storage medium with a first range of disk drive host interface addressable locations, a method for installing a mailbox file associated with the disk storage medium, the installation method comprising the steps of:

obtaining a disk drive access key from an access key server, the access key being generated by the access key server as a function of an identifying characteristic of the disk drive;

creating a mailbox file in the first range of addressable locations using the access key obtained from the access key server; and

notifying the disk drive of a location of the mailbox file in the first range of addressable locations, wherein the disk drive can perform an executable function characterized by contents of the mailbox file.

2. (Original) A method according to claim 1, wherein the function is used to access a second range of addressable locations that are not disk drive host interface addressable and that are contained on the disk storage medium.

3. (Original) A method according to claim 2, wherein the access key is required for an application program to access the second range of addressable locations via the mailbox file.

4. (Previously Presented) In a computer system including a host computer, a disk drive host interface and a disk drive having a disk controller, a method for accessing a mailbox file associated with a first range of disk drive host interface addressable locations, the method comprising the steps of:

recognizing a command from a host operating system in reference to the mailbox file associated with the first range of disk drive host interface addressable locations; and

responding to the command by performing within the disk controller an executable function characterized by the contents of the mailbox file.

5. (Previously Presented) A method according to claim 4, wherein the first range of disk drive host interface addressable locations refers to a storage space allocated in at least one of a disk storage medium and a computer memory associated with the disk controller.

6. (Previously Presented) A method according to claim 4, wherein the mailbox file contains encrypted information.

7. (Previously Presented) A method according to claim 1, wherein the mailbox file includes at least one of a command that is to be executed by the disk controller, and an address of a command that is to be executed by the disk controller.

8. (Previously Presented) A method according to claim 4, wherein the mailbox file includes at least one of a command that is to be executed by the disk controller, and an address of a command that is to be executed by the disk controller.

IX. EVIDENCE APPENDIX

None

X. RELATED PROCEEDINGS APPENDIX

None